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WINTER 1970

OUR PUBLIC LANDS

TWENTY-TWO DAYS IN AUGUST
PAGE 5

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OUR PUBLIC LANDS

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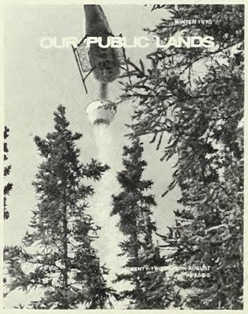

The Cover

A helicopter fights fire with water scooped from a nearby lake.

Photo by Chuck Robinson

U.S. DEPARTMENT OF THE INTERIOR
Walter J. Hickel, Secretary

BUREAU OF LAND MANAGEMENT
Boyd L. Rasmussen, Director

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Department of Natural Resources."

The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States—now and in the future.

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Ed Parker, Editor

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HIGHLIGHTS

Secretary Hickel Accepts Recommendations of Wild Horse Committee

Interior Secretary Walter J. Hickel has accepted the recommendations of a special committee established in 1968 to recommend management practices for a 32,000-acre range set aside for wild horses in the Pryor Mountains of Montana. BLM administers the range.

The committee submitted its recommendations to BLM Director Rasmussen in June (see "Wild Horses of the Pryors," Our Public Lands, Fall 1969).

Interior Specifies Pipeline Stipulations

The discovery of oil and subsequent activities on Alaska's North Slope have been a major concern to Department of the Interior officials who are responsible for the protection of Alaska's natural environment.

Studies have been underway for some time to deter[illegible]ine the potential impact of these activities on the [illegible]ragile environment. A special task force has made on-the-ground investigations of the possible routes for a pipeline from the Prudhoe Bay area of the North Slope to the ice-free port of Valdez.

The Department has prepared stipulations which will be incorporated in any grant of a pipeline right-of-way, if one is issued. These stipulations deal with six general areas.

Employee Training.—The pipeline company is required to train its personnel so that they will be aware of environmental values they are to protect. Training will cover a wide variety of activities, including the prevention and suppression of fires and the provisions of State and Federal game laws.

Protection of Aesthetic and Cultural Values.—The pipeline company must report archeological, paleontological, and historical sites observed during the course of its construction activities. It must hire an archeologist to assure the preservation of valuable discoveries.

Permanent installations, such as pumping stations, must be designed to harmonize with the natural setting.

Where the pipeline runs parallel to a stream, the company must provide a 300-foot buffer zone between stream and pipeline. Construction will be prohibited within one-half mile of a designated recreation site unless permission is given in writing. The company must secure a special use permit for all activities conducted outside the right-of-way.

Prevention of Pollution.—The pipeline company must take all necessary precautions to prevent pollution. Sanitation and waste disposal practices must meet standards set by the Alaska Department of Health and Welfare, the U.S. Public Health Service, and Interior's Federal Water Pollution Control Administration. Other pollution abatement controls must meet established Federal standards for Alaska.

The company must prevent harmful heat pollution. It cannot use herbicides or pesticides not approved by the Department of the Interior.

Protection of Streams.—The pipeline must be laid under streams, except where approval is otherwise given. The pipeline company must provide a passageway for fish in all situations where approval is given to cross over a stream.

The company cannot create any permanent obstruction to small water craft, nor can it create any new lakes or divert natural channels without written permission. Where necessary, it must provide settling pools to protect spawning beds. It must take precautions at crossing points to prevent pollution by silt or from drainage from the pipeline trench. Activities that cause streambank erosion that could endanger the spawning beds of migrating fish are prohibited. All underwater blasting must be approved by the Alaska Department of Fish and Game.

Protection of Watersheds.—In choosing the pipeline route, the pipeline company must consider terrain, population centers, wildlife habitat, public water supplies, and hazardous geological areas. It must develop a detailed contingency plan for controlling oil spills and possible pipeline breaks. It must develop a detailed plan for detecting seismic disturbances and for coping with possible earth shifts. All construction operations must be conducted so that the least possible disturbance of the environment will result. Where land must be disturbed, it must be restored as much as possible.

Construction vehicles may not operate outside of the right-of-way or special use areas except in an emergency. The company must protect against permafrost melt. In those areas where heavy equipment will damage steep slopes or streams, vegetation must be cleared by hand. Logs and slash from clearing opreations must be cleared from streams and, where at all possible, such debris must be kept out of streams. Logs must not be skidded across streams.

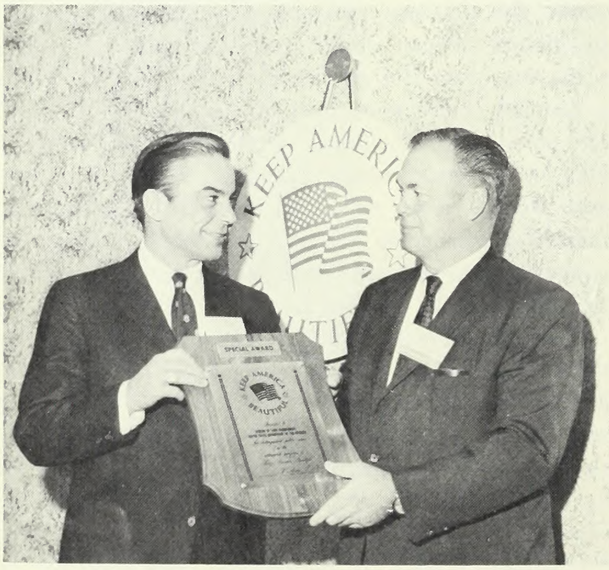
Construction crews and other pipeline employees must observe State and Federal laws concerning fire prevention. The company must contract with BLM for material sites to secure sand, gravel, and timber. At all material sites the company must provide buffer zones adequate to maintain aesthetic values.

Enforcement of Terms.—BLM will be responsible for compliance with all stipulations. A team of Government experts will accompany construction crews to monitor construction activity. The company is required to post a security bond of $5 million. BLM will have authority to require rerouting or redesign of the pipeline to meet unforeseen environmental conditions. Construction may be delayed to meet environmental contingencies. Finally, BLM is empowered to terminate construction activities if necessary to assure compliance with terms and conditions.

BLM's Johnny Horizon Campaign Receives Keep America Beautiful National Award

Keep America Beautiful, Inc., the national antilitter organization, has presented eight conservation groups, an Indian tribal council, and the Bureau of Land Management with 1969 Special Awards for outstanding achievements in litter prevention.

The awards were presented in New York on November 18 during KAB's annual meeting, an event attended by some 500 leaders of the litter prevention movement. KAB's newly elected president, James C. Bowling, praised the organizations for exceptional leadership and initiative in obtaining support of other groups and individuals in their continuing antilitter efforts. He said the organizations have contributed immeasurably to the improvement of the Nation's outdoor environment.



KAB President Bowling and Director Rasmussen

Mr. Bowling pointed out that recognition of BLM[illegible] antilitter program and its symbolic leader, Johnny Horizon, represents the first national award given by KAB to a Federal agency. Director Boyd L. Rasmussen accepted for the Bureau.

Special awards were also given to the American Forestry Association; Izaak Walton League of America; National Audubon Society; National Wildlife Federation; Nature Conservancy; Sierra Club; Wilderness Society; Wildlife Management Institute; and the Quinault Indian Tribal Council.

Turcott Fills New Position

George Turcott, Jr., former Deputy Assistant Director for Renewable Resources, has been named Assistant Director for Technical Services, a new position created by a recent reorganization of BLM's Washington office. He joined BLM in 1950 and has since served in many resource management positions in BLM field offices and in Washington.

New Leasing and Operating Rules Adopted for Outer Continental Shelf

The Department of the Interior has adopted stringen[illegible] new regulations governing oil and gas leasing operations on the Outer Continental Shelf.

The new regulations contain provisions requiring full consideration of all environmental factors, including aquatic resources, esthetics, and recreation, before a decision is made to offer leases for sale. They provide that public hearings may be held, and that there may be a consultation with organizations, individuals, and State agencies prior to reaching a decision to lease. The regulations also provide for:

- The suspension of any operation that threatens life (including aquatic life), property, mineral deposits, or the environment.
- Prior review and approval of exploration, drilling, and development plans before work may begin.
- Stiffer technical requirements to prevent environmental contamination and to maintain control of wells.
- Frequent testing of blowout equipment for proper functioning.
- Prompt reporting of operational difficulties.
- Responsibility of the lessee for the total removal of pollutants at his expense.

Fighting fire and wind in Alaska

TWENTY-TWO DAYS IN AUGUST

It was early August, and people all over southern Alaska's Kenai Peninsula were enjoying the last days of summer. Here in late summer the mid-day sun is soft and warm, but as it dips toward the horizon there is a chill in the air that makes a campfire feel good.

The peninsula, about the size of Connecticut, draws outdoor enthusiasts from the greater Anchorage area as well as visitors from out of State. Some pitch camp by lake or stream, others seek more isolated places among groves of white birch and spruce.

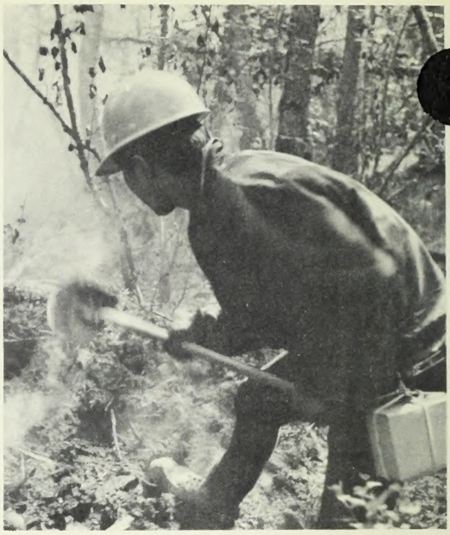
The Kenai offers a variety of attractions. The visitor can fish in its many lakes and streams, hike in the woods, or take pictures of wildlife inside the Kenai National Moose Range. At night, they relax in the yellow glow of their campfires. When vacations are spent, they break camp and, mindful of numerous warnings, douse their campfires dead-out and head for home.

But on a day in early August a camper along the Swanson River left an ember of his fire unquenched.

At 2:30 that afternoon, August 3, a pilot out for a Sunday flight reported smoke rising from the Kenai. The Swanson River Fire was on its way to notoriety.

Soldiers from Fort Richardson, Alaska, arrive fully equipped for fireline duty.

Kenai Airport—The 22-day battle required many tons of supplies.



Wind and Fire

When first noticed it was a small fire. Men from Standard Oil Company installations on the peninsula and Bureau of Sport Fisheries and Wildlife personnel from the Moose Range turned out to fight it. Under ordinary conditions, they might have put it out, but conditions on the peninsula were far from ordinary. One of the driest springs and summers in Alaska's recent history had left the countryside drier than a sourdough's gullet. Whipped by sharp, erratic winds and fed by dry ground cover, the fire easily outran the first contingent of fighters. By Sunday night it had grown from an ember to a 100-acre fire.

As soon as the report of the fire reached Bureau of Land Management offices in Anchorage additional men and equipment were dispatched to Kenai. The Bureau is the principal fire suppression agency in Alaska, and through cooperative agreements with the Bureau of Sport Fisheries and Wildlife is responsible for protecting National Wildlife Refuges throughout the State. The Bureau has large fire fighting resources, but by August those resources had been severely strained.

In a normal year the Bureau can expect a serious outbreak of wildfire in Alaska to begin about the first of May. But in 1969 there were serious outbreaks by April. In 1968 wildfire burned approximately 1 million acres; the 1969 toll eventually reached 4.3 million.

With BLM men and equipment dispatched to Kenai, the fire was duly recorded and designated as the Swanson River Fire, No. 9311. By midnight of the first day, 49 people with equipment were on the fireline.

Although the fire was still burning 24 hours later, it appeared that normal control procedures would be adequate. Because of erratic winds and the tinder-like conditions of the ground cover, however, officials recognized that control of the fire would require a major effort. Still, this was but one among hundreds of wildfires that had demanded the Bureau's attention during the past 4 months, and already it was being contained inside firelines and was responding to control efforts in normal fashion.

Runaway Flames

But holding the fire quickly grew difficult, then impossible. In the Swanson River area, ground cover is dense; in August it was tinder-dry. Such conditions produce high energy fires, and gusting winds across the peninsula caused the flames more than once to jump existing firelines. With each new outbreak the crews had to regroup and build new lines in an attempt to hold the runaway flames.

Fighting a large fire is analogous to a military action. Fire crews must perform as a team, and each man on the line must have the support of a complex organization that reaches far behind the lines. The secret of a successful effort is organization and logistics. A bulldozer without fuel is only a heap of metal; a man without tools is helpless.

Since wildfires are seasonal and may be few in some years and many in others, BLM and other agencies cannot maintain on a standby basis enough men and material to meet extreme fire emergencies. This situation led to the establishment of the Boise Interagency Fire Center (BIFC) in Boise, Idaho. The Center is administered by BLM and operated in cooperation with the Forest Service in the U.S. Department of Agriculture and the Weather Bureau in the U.S. Department [illegible] Commerce.

The Center keeps rosters of trained fire crews in western states and Alaska and trained supervisory personnel in all BLM State and District offices and in other Federal agencies. It also stores quantities of equipment and supplies and, when needed, contracts for additional heavy equipment.

When fire emergencies require more manpower and equipment than is available locally, BIFC is requested to help. In the early days of the Swanson River Fire, the Center began ferrying men and material to Alaska at the request of BLM's State Director.

In addition to support from BIFC, the Alaska State Director, through cooperative agreements, also could request manpower from other agencies in the State. On the seventh day of the fire the U.S. Army sent 800 men to the firelines, an especially valuable contribution at that time because each man reported fully equipped for duty. The soldiers later were to number 1,300. Men and materials were contributed by other agencies also, including the Forest Service which sent much needed aircraft with radar equipment to map the fire.

On August 13, the tenth day of the fire, the expenditure of men and material seemed to be paying off. At that time 55,000 acres had burned, and more than 2,600 men, 50 bulldozers, and 22 helicopters had joined the battle. The combined assault had slowed the fire's advance, and the weather was more favorable. Experienced firefighters were predicting that the fire would be contained in a few days.

The weather did not remain favorable.

Out of the north, 40-mile-an-hour winds came gusting across Cook Inlet. Like a giant bellows the wind whipped the flames to a new fury and, catching up glowing embers like dust from a country road, flung them across the laboriously constructed firelines and sowed them among the tinder-like debris that littered the forest floor.

Out of Control

A hundred new fires sprang to life beyond the firelines as the dry vegetation exploded into an inferno of devouring flame. The wind-driven flames swept through the underbrush and in moments all hope of containment was again lost in the nightmare of a new holocaust.

The fresh outbreak brought new threats.

The towns of Kenai, Soldotna, and Sterling were in the path of the flames as well as the Sterling Highway and the Kenai Spur road. Alarmed local citizens now joined fire crews on the line, and civil defense agencies moved to help protect lives and property. Fifty-five families whose homes were most directly threatened by the advancing flames were evacuated.

Following that tenth-day outbreak, the Kenai fire raged for another 12 days. By then, over 4,000 men were on the fireline. Eskimo and Indian firefighters had come from 60 villages in Alaska. Overhead crews had come from BLM offices throughout the West and from other cooperating agencies. Office secretaries and college coeds moved into temporary office quarters with typewriters and steno pads to produce the necessary paper work and to maintain the necessary records.

A sophisticated radio-telephone system maintained communications between the various units, and 20 electric generators supplied electricity. The Kenai Civil Air Patrol had evacuated its hanger so it could be used as a warehouse for incoming supplies. With the men on the fireline were 72 bulldozers, 35 track vehicles, and 27 helicopters. Transport planes were pressed into service to fly more than 3,000 missions, move 1,000 tons of equipment, and 100 thousand gallons of fuels. Specialized planes also dumped 700 thousand gallons of fire retardant on the flames, and helicopters dumped 80 thousand gallons of water.

The towns of Kenai and Soldotna were crowded, their motels and restaurants jammed. Every empty trailer that could be found on the peninsula or in the greater Anchorage area had been commandeered for temporary office space, and tent cities had mushroomed about the towns and through the bush to serve as fire camps. Eskimo fire crews mixed with Indian firefighters, and in a babble of languages they were asking for such diverse foods as chili peppers and seal oil. Their requests were filled, for now the fire had been slowed to a manageable pace.

Then it rained.

Rain and wet fuel dealt the fire a staggering blow, and the fire crews moved quickly to finish the job. At last the 22-day firefight on the Kenai Peninsula was ended.

In terms of men and material, the Swanson River Fire required the greatest effort ever made by BLM to suppress a single fire. In other terms, 87 thousand acres were blackened, the scenic Kenai sustained an ugly scar it will bear for many years, and one house and two house trailers were burned. No lives were lost.

The name of the careless camper is unknown, and likely he remains unaware of the destruction he caused. Unfortunately, similarly careless people will cause other fires . . . but since it became so widely known that the destructive Swanson River Fire was man-caused, perhaps the numbers of the careless ones will be fewer. ☐

A WILL TO ENDURE

THE ASH MEADOWS area of Nevada, 70 miles west of Las Vegas, is a true desert environment. The land receives little moisture, and vegetation is sparse. Sudden whirlwinds darken the sky with dust, and heat waves in summer make the horizon dance.

It can be a hostile land, for plant and animal alike, yet it is home to a species of tiny fishes, the Nevada pupfishes, that trace their ancestry to the time of the glaciers.

The pupfishes, *Cyprinodon nevadensis,* live in a number of small isolated springs and waters, but one subspecies, *C. n. pectoralis,* is so rare that its only home until recently was a spring scarcely larger than a bathtub. Listed among the rare and endangered fish and wildlife of the United States by the U.S. Bureau of Sports Fisheries and Wildlife, *pectoralis* is now protected by the Bureau of Land Management. The Bureau also plans protective measures for a more common type of pupfish, *mionectes,* that lives in another small spring, also on public lands.

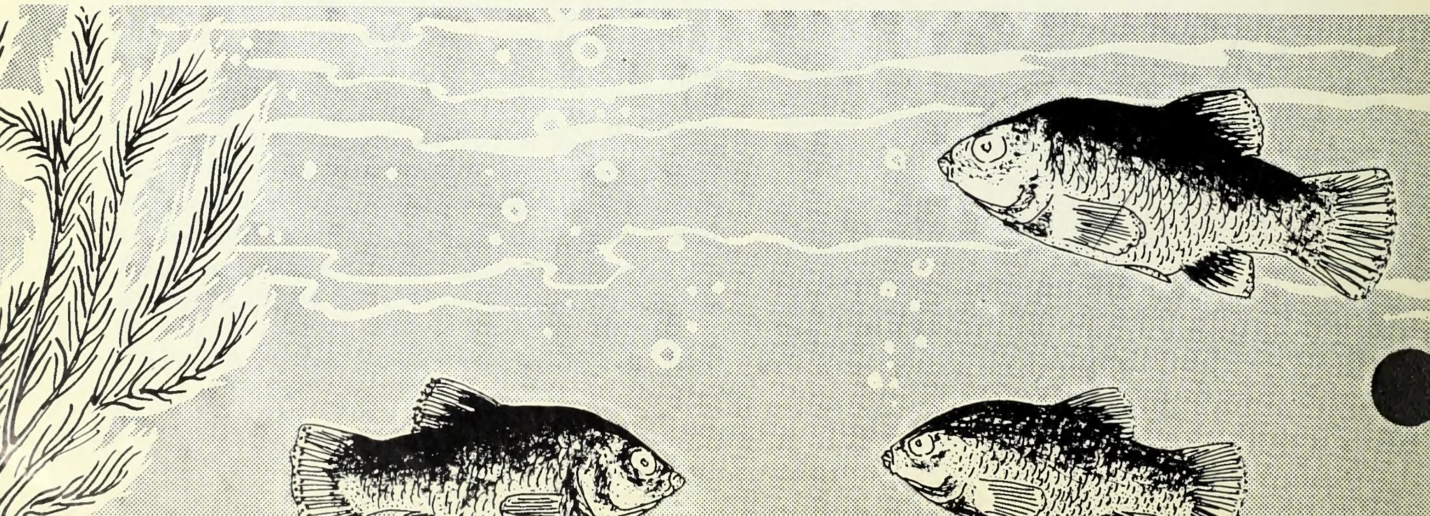
Pupfishes are the smallest members—less than two inches—of the killifish family. Killifishes are primarily tropical in world distribution, and in North America are found mostly in brackish or alkaline waters.

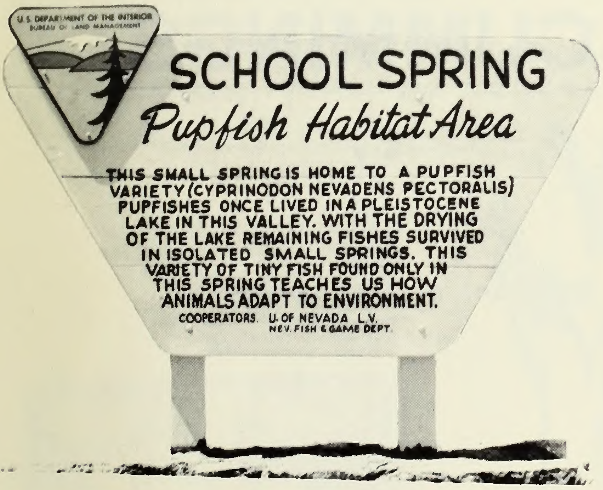
Following the Pleistocene ice age, the Ash Meadows fishes inhabited an aquatic system that included Owens Valley and the Mojave Basins in California, and Death Valley and Amargosa Valley in California and Nevada

As the climate continued to warm and become dri[illegible] the extensive lakes and watercourses disappeared until living space for the fishes was restricted to small isolated springs and waters. Over thousands of years this isolation resulted in a great variation in the Nevada pupfishes as they adapted to their individual environments.

Thus it happened that far in the past a small spring in the Nevada desert became the last refuge of the sub-

Surviving a relentless environment




U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SCHOOL SPRING
Pupfish Habitat Area
THIS SMALL SPRING IS HOME TO A PUPFISH VARIETY (CYPRINODON NEVADENS PECTORALIS) PUPFISHES ONCE LIVED IN A PLEISTOCENE LAKE IN THIS VALLEY. WITH THE DRYING OF THE LAKE REMAINING FISHES SURVIVED IN ISOLATED SMALL SPRINGS. THIS VARIETY OF TINY FISH FOUND ONLY IN THIS SPRING TEACHES US HOW ANIMALS ADAPT TO ENVIRONMENT.
COOPERATORS. U. OF NEVADA L.V.
NEV. FISH & GAME DEPT.

By LEWIS MEYERS
Wildlife Management Specialist
BLM District Office, Las Vegas, Nevada

species *pectoralis.* The pupfishes apparently adapted well to the highly mineralized water and its constant temperature of 92 degrees, but in more recent times there have been new threats to their survival: other fish, animals, and man.

To protect both subspecies of the pupfish in the two springs on public lands, BLM's District Office in 1968 developed a habitat management plan. After further study in the spring of 1969, BLM biologists felt that if the subspecies *pectoralis* were to survive, that the School Spring habitat needed immediate protection. Officials of Nevada's Department of Fish and Game concurred.

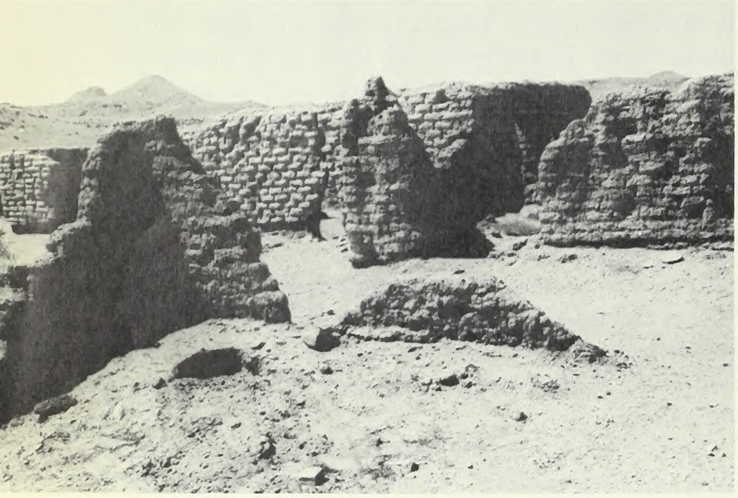
The major problems identified by the study included human and livestock damage to the habitat, and the introduction of various exotic, or nonnative, fishes as well as crayfish and bullfrogs. The foreign species were competing with pupfishes for food and for breeding and living space, and in some cases were preying on the pupfish.

Further emphasizing the need for immediate protection, researchers from Nevada Southern University found that pupfish populations were declining rapidly and, in fact, had been completely eliminated in two privately-owned springs.

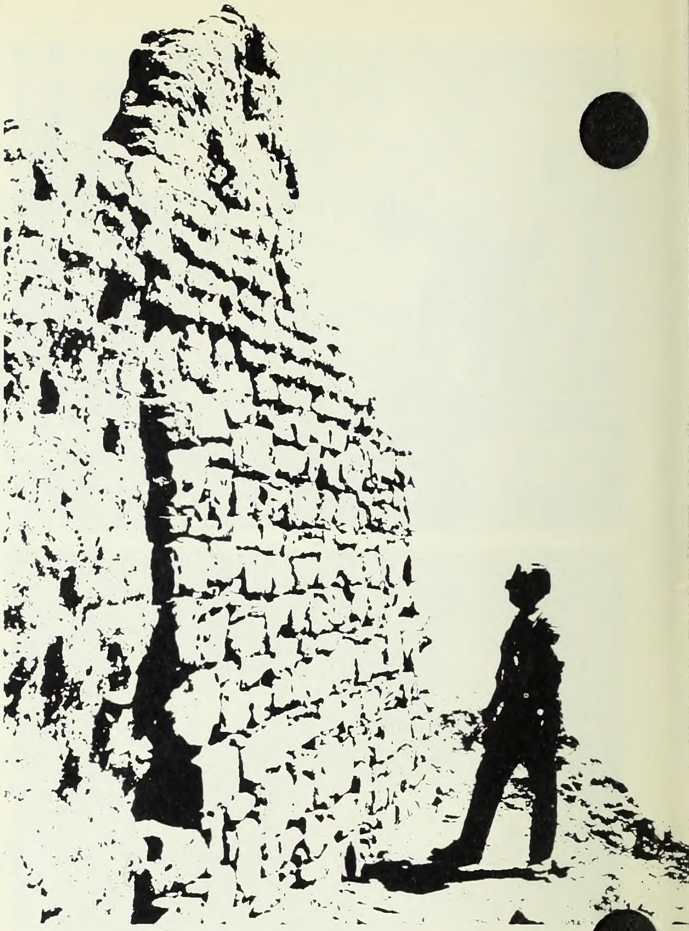
Since the right to use the water flowing from School Spring was held by a local individual, BLM's first move was to work out an agreement with him. Construction then began on a 6-foot high chain-link fence to provide a people-animal-proof 1-acre exclosure around the spring. The objective was twofold: Fully protect the hardy little 2-inchers from man and animal and thus increase their changes for survival; and maintain the fish in a suitable, isolated, protected environment for continued intensive biological research studies by the University of Nevada. Foreign fish and frogs were also removed from the spring and the bathtub-size ponded waters were more than doubled in area.

This done for the fish, BLM then provided for people. Outside the exclosure, BLM constructed another small pond, piped water to it from the spring, and transplanted some of the pupfish. Picnic tables and restrooms are nearby, and an interpretative sign tells visitors the story of the shiny blue, energetic little fish they see in the pond.

A number of organizations and individuals contributed to the School Spring project, including Boy Scouts of Explorer Post 115 in Las Vegas who assisted in most phases of the work. Through these cooperative efforts, a rare subspecies of pupfish continues to live in the Nevada desert—a survivor of ancient climates and a relentless, ever-changing environment. ☐



Remains of the sutler's store, south of the fort.



Remains of Fort Cummings' main gate.

FORT CUMMINGS

Remnant of the frontier

By **NORMAN F. MATHEWS**
Natural Resource Specialist
BLM State Office, Santa Fe, N. Mex.

KEEPING SILENT WATCH along the old Butterfield Stage route in a small, isolated valley 14 miles northeast of Deming are the rapidly crumbling ruins of New Mexico's only frontier fort that was fully walled.

Fort Cummings, named for Major Joseph Cummings, a doctor with the 1st New Mexico Cavalry who was killed by Navajos in 1863, is little known today outside its own area. But during the first 10 years of its existence it was one of the most important forts in a cross-country chain that was the Army's southwestern bulwark against raiding Apaches.

Officially established on October 2, 1862 by orders of General James H. Carlton, the site was immediately garrisoned and construction was begun by troops of Company B, First Infantry, California Volunteers.

As first built, the fort was almost square, 320 feet by 360 feet, with adobe walls 4 feet thick and 10 feet high. The various quarters, offices, storehouses, and shops were built against the inner walls. The main entrance was in the center of the south wall, and at one time was surmounted by a tin-roofed guard tower.

An official 1866 map shows the complement of the fort to have been 100 officers and men, 65 horses and mules. When first established, the military reservation was 2 miles square, but in 1880 it was enlarged to 6 miles square "for the purpose of keeping off improper characters, desperados and horse thieves."

Dreaded Canyon

The fort was located at the eastern entrance to famed Cooks Canyon, a mountain passageway once dreaded by travelers using the southern route through New Mexico. High-walled, narrow, and 4 miles long, the canyon was ideal for Indian ambushes. Legend says that as many as 200 travelers were killed there.

The canyon, however, was the only way to get through the mountains of Cooks Range, and many travelers preferred to risk ambush rather than attempt a long detour around the mountains over a route with no known water available. A yearlong spring near the fort was apparently the only permanent source of water between the Rio Grande and Lordsburg, more than 100 miles to the west.

Cooks Canyon, the mountain range, and towering Cooks Peak (8,404 feet) 8 miles to the north were named for Colonel Phillip Cook of the Second Dragoons. Cook had used the canyon passage in 1846 when he led the Mormon Battalion through New Mexico to assist Brigadier General Steven Watts Kearny in occupying California at the beginning of the Mexican War. It soon became the recognized route for stagecoaches and settlers' wagons.

The old emigrant and Butterfield stage road passed from east to west about a quarter of a mile south of the fort. The ruins of the stone walls of Butterfield's horse corral and of the adobe walls of the sutler's store can still be seen, and traces of the wagon road are visible in a number of places in the area and in the canyon.

Among the Army units that served at Fort Cummings were companies or detachments of the 125th Infantry, 38th Infantry, Third Cavalry, Fifth Infantry, and the First Infantry, New Mexico Volunteers. During the active years of the fort these troops were called to battle such notable Chiricahua and Mimbreno Apache leaders as Geronimo, Chato, Loco, Nana, and Nachite, the son of Cochise.

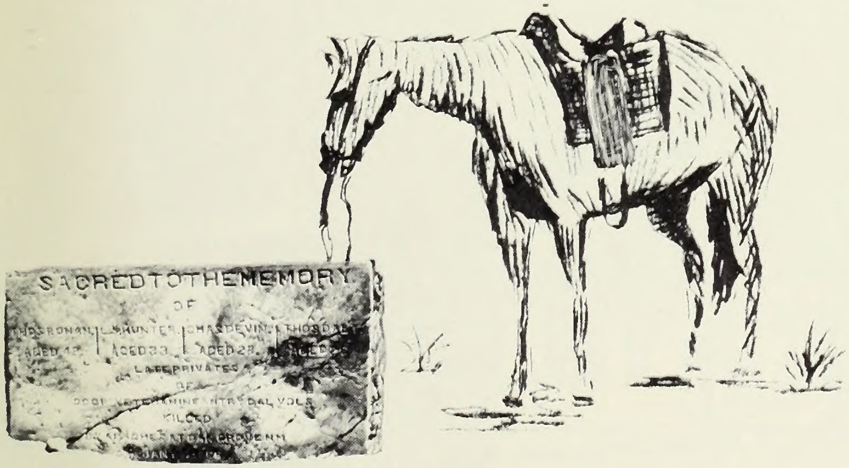
Cemetery Ruins

About three-quarters of a mile southeast of the fort on top of a hill are the remains of the military cemetery. Originally it was 250 feet square and was surrounded by 5-foot stone walls. Traces of the cemetery are fast disappearing. Still standing, however, is a large, hand-hewn headstone dedicated to the memory of four California Volunteers. They were killed by Apaches while hauling wood from an oak grove 4 miles northwest of the fort. A fifth man escaped, although wounded.

Fort Cummings was not destined to remain active for as many years as did a number of other frontier posts of the era. By the early 70's the Indian menace appeared to be over, and in August 1873 the War Department ordered the fort to be closed and abandoned. But in a few years an Apache leader, Victorio, and a group of followers renewed hostilities. The army again took to the field throughout most of the Southwest, and Fort Cummings was reactivated. With Victorio's death in 1880, peace gradually returned to the frontier. Once again the flag was lowered at Fort Cummings, and on August 23, 1884 the fort was permanently abandoned.

The Fort Cummings ruin lies almost entirely on public lands administered by the Bureau of Land Management. The Bureau, in cooperation with the Museum of New Mexico, plans to stabilize and partially restore the ruin and to interpret the role of Fort Cummings in the early history of the West.

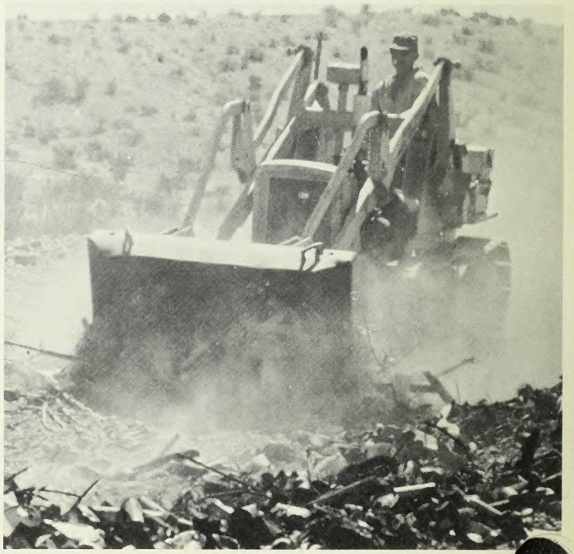
Visitors can reach the area by taking State Road 26 from Deming to the hamlet of Florida where a gravelled county road leads 6 miles west to the fort. ☐



The last remaining gravestone in the fort's cemetary.

A first for Johnny Horizon an[illegible] rt

Car bodies were cut up by torch into small pieces for easier removal.



In some places litter was piled and buried.

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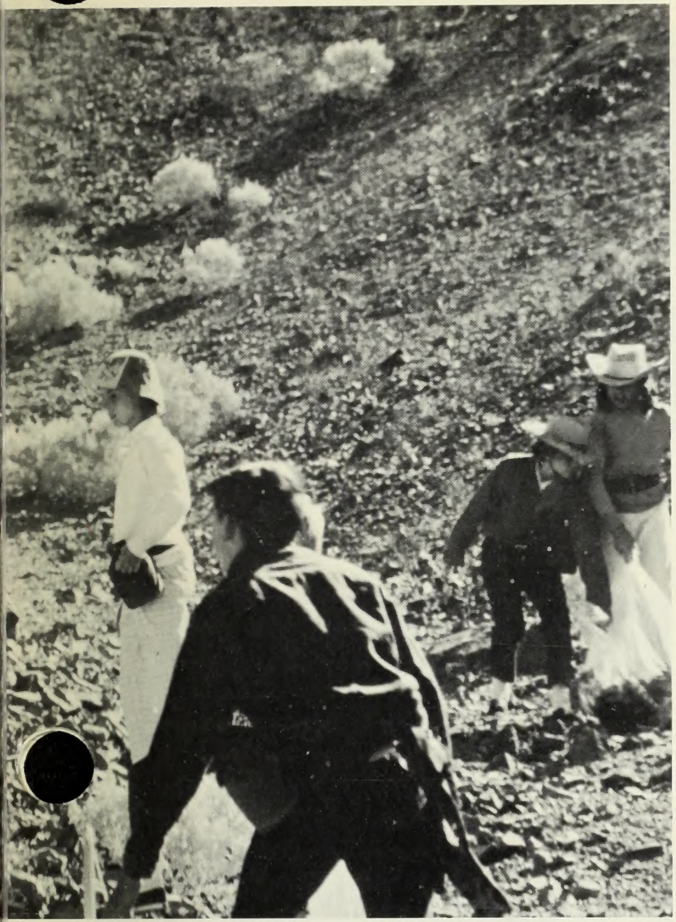


IT STARTED rather quietly in California.

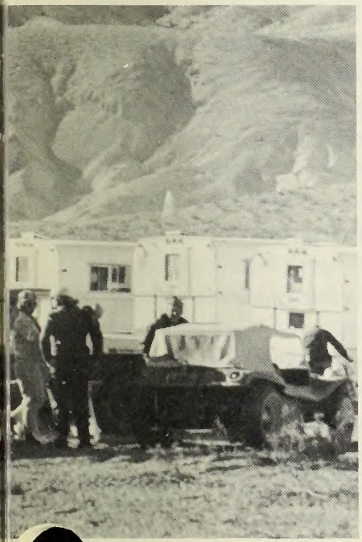
Before it was over, thousands of people in the West, from Texas to Washington State, were involved.

When it was over, western landscapes were a lot cleaner.

Johnny Horizon Countryside Cleanup Days, October 10–12, 1969, was an event first planned for areas in California by CORL—the California Outdoor Recreation League. It was to demonstrate that Californians are concerned with litter and are willing to help clean it up. CORL also urged other organized recreation groups to carry out similar countryside cleanup programs. The American Federation of Mineralogical Societies enthusiastically sought co-sponsors in many States.

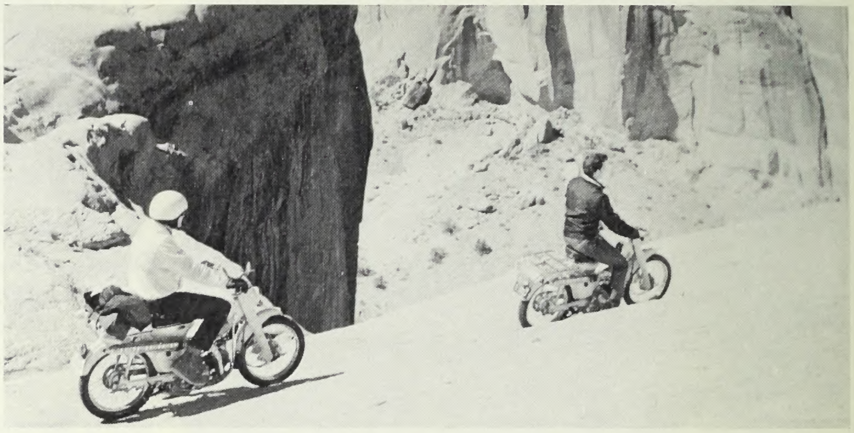
By October 10, when the event was officially launched in California, five other western governors had joined Gov. Ronald Reagan in proclaming the weekend. Arizona's Gov. Jack Williams, Colorado's Gov. John Love, Nevada's Gov. Paul Laxalt, Utah's Gov. Calvin Rampton, and Wyoming's Gov. Stanley Hathaway all issued statements and proclamations.

And public-spirited citizens throughout the West translated those statements and proclamations into action. In the largest cleanup event ever held in this country—a first for Johnny Horizon and partners—over 30,000 men, women, and children worked through the weekend, cleaning their land at a savings estimated at nearly $350,000.



SLICKROCKING

Riding the Nation's most durable trail



Photos by Dick Wilson

JUST EAST of the town of Moab in southeastern Utah, motorbike riders can now travel a trail that may be the only one of its kind in the country.

It's solid rock.

The Moab Slickrock Bike Trail, developed by BLM's Monticello District, traverses an extensive formation of Navajo sandstone which, because of its smooth, rolling surface and lack of vegetation, is commonly called "slickrock."

At the formal opening of the trail this past summer, F. C. Koziol, director of Utah's Parks and Recreation Division, said that recreational use of the sprawling formation "is a good lesson in conservation." He called the trail indestructible, "the most durable motorbike trail in the Nation."

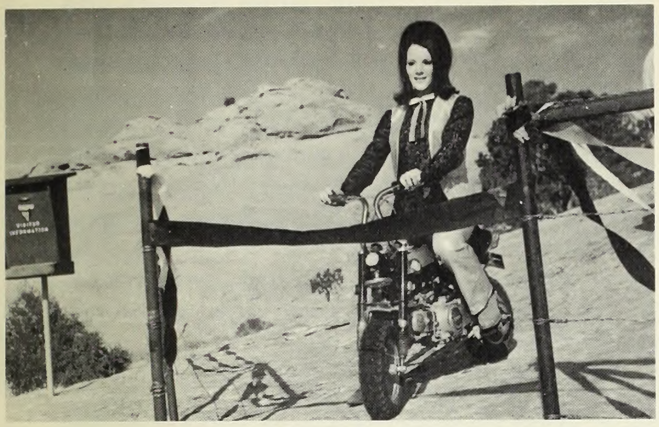
The trail was first proposed to BLM by a trail bike enthusiast, Dick Wilson, outdoor editor for the Moab Times-Independent. When the project got underway, Wilson also assisted in designing and developing the trail.

The need for the bike trail stems from the fact that, in the Moab area as well as all over the country, dune buggies, trail bikes, and other off-road vehicles have become increasingly popular in recent years. As sales of these vehicles have skyrocketed, more and more people have taken to the backcountry in search of recreation.

By **RICHARD G. BURCH**
Natural Resource Specialist
BLM District Office, Monticello, Utah

While travel in backcountry by off-road vehicles is considered one of the recreational uses of public lands, it also poses problems for the land manager. In the hands of careless and inconsiderate individuals, such vehicles can be extremely destructive to the land and its resources. Wheel ruts across a fragile watershed, for example, can start uncontrollable erosion. Where abuses have occurred, particularly in areas highly susceptible to erosion, land managers have sometimes sought to overcome the problem by closing an area to wheeled traffic. At the same time they recognized this as a negative solution and, since it would be unrealistic to close all watersheds to vehicular traffic, they felt that a positive approach to the problem was needed. The development of the Moab Slickrock Bike Trail was a positive approach, a step in the right direction.

IN UTAH



Susie Tangren of Moab, Grand County Rodeo Queen, rode through the ribbon to officially open the trail.

Since watershed values were involved, the trail was designed only for low-geared motorcycles and trail machines equipped for travel in rough country. Four-wheeled vehicles, including dune buggies, are not allowed. They cannot stay on the marked trail and would have to follow the sandy bottoms, possibly causing considerable damage to the watershed.

Excellent Traction

In spite of its name, the buff-colored slickrock actually provides excellent traction for trail bikes, and even relatively inexperienced riders can enjoy a portion of the trail. For inexperienced riders and for those new to slickrocking, there is a practice loop of 2.3 miles near the beginning of the trail. The main loop trail, for more experienced riders, is 10.3 miles long, not including side trails. It takes about 5 hours to travel, and there are some rough spots where it is most practical to walk the bike.

Trail riders are warned not to participate in contests, that riding the trail is for enjoyment and for sightseeing only. In this regard, there is much to see and enjoy.

A spur off the practice loop winds 2 miles across the sandstone to a natural phenomenon common to southeastern Utah, a weather-carved bridge of stone. Morning Glory Bridge, with a span of 200 feet, stands majestically above a deep pool of blue-green water that resembles the famous Morning Glory Pool in Yellowstone National Park. Another side trail leads a long stone's throw off the practice loop to Echo Point. A shouted word here returns with amazing clarity from the canyon depths below.

Along the main trail, which is identified by bike tread marks painted on the rock, the trail biker skirts isolated islands of plant communities. Erosion of the extensive sheets of sandstone over many thousands of years has produced uncounted pockets of sand which support a variety of vegetation that ranges from lichens, a small and basic form of plant life, to pinon and juniper trees.

Shrimps

Further along is Shrimp Rock, a dominant feature of the landscape that is named for the fresh water shrimps that live in pools at its base. The shrimps—commonly called tadpole, fairy, and clam—are found in great abundance in the pools and manage to perpetuate their species despite the fact that the pools frequently dry up. They do so by laying their eggs in the muddy bottom: when the pools dry up, the eggs become dormant and do not hatch until water once again fills the pools.

Beyond Shrimp Rock the trail skirts the rim of the sandstone for about 1 mile. Here the slickrock falls abruptly away to the valley floor and the Colorado River 600 feet below, and many points along the rim offer sweeping views of the country beyond, including Arches National Monument. Ot one point just below the rim is a good example of a pothole arch. Updraft Arch was formed by water slowly dissolving the sandstone from under a narrow ridge. A short footpath leads from the bike trail to a viewpoint where travelers can look through the arch from above and see the Colorado River below.

Swiss Cheese

One of the attractions most popular with visitors is near the end of the trail. This is Swiss Cheese Ridge, a narrow strip of sandstone that is pockmarked with potholes. Many of the potholes are as deep as 50 feet and contain water year-round, and each is interesting in itself. Many contain the fresh water shrimps found below Shrimp Rock, a few support different types of algae, and one even has a large cottonwood tree growing out of it.

Since the opening of the trail, bike riders from all over the United States have traveled its nature-paved path, enjoying the experience of slickrocking as well as the interesting and scenic sights along the way.

All have been enthusiastic, their pleasure summed up best, perhaps, by a couple from Salt Lake City: "Great trail. Thanks. We need more!" □

A modern system for old records

MICRO RECORDS FOR MACRO SERVICE

LITTLE LAND RECORDS are yielding big efficiencies in Bureau of Land Management offices in Oregon.

A constant search for better ways to serve the public has led to the use of microfilm land title records in BLM's State Office and 10 District Offices in Oregon. These public records show which lands are Federally owned and tell of transactions affecting them. The records also show lands transferred from Federal ownership and any interest the United States may have in these lands.

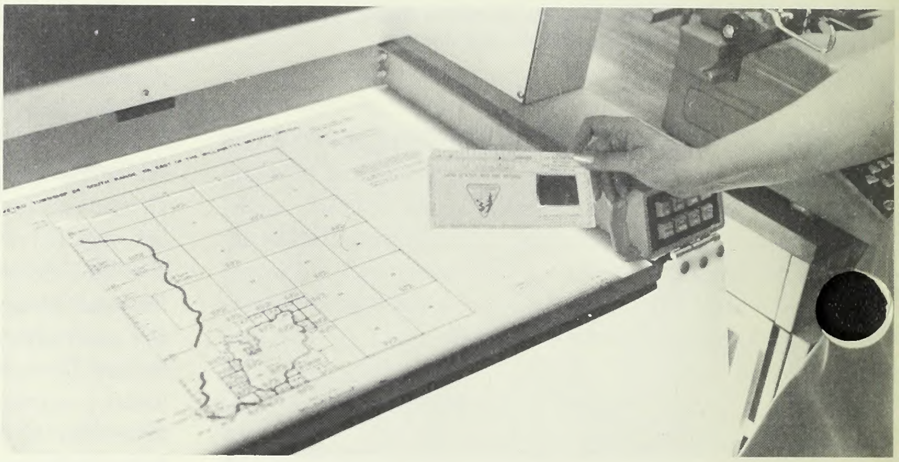
Title records, combined with survey records, are the main components of the public land records system used in 11 western States and Alaska where the Federal Government administers large areas of public land.

Public land records are a part of the history of settlement in the United States. In the early days, almost all the public lands were surveyed on the ground and mapped on survey plats. Surveyors made field notes giving the direction and length of boundaries, the description of the monuments and a general description of lands covered by surveys. Keeping survey records current continues as a major responsibility of the Bureau of Land Management.

Survey records play a key part in the public land record system. They describe land areas for disposition or management, and they are used to locate survey monuments which establish boundaries on the ground.

Surveys divide each public land state into numbered townships. In Oregon, for example, there are 3,200 townships. A chunk of land 6 miles square is a township. Each township is further divided into 36, mile-square sections of about 640 acres each. Each section is further divided into regular subdivisions, or lots, containing about 40 acres.

Upon settlement or sale of lands, record notations formerly were made by township, section, and subdivision on public use title survey plats in tract books. In this way, a person could read the records and determine the ownership and availability of each land parcel. Additional notations were made in the records by land description to show withdrawal actions setting lands apart for such public purposes as national forests, classification actions designating lands for disposal or multiple use, and other transactions affecting the availability of public lands for public and private uses.



Each aperture card contains a negative of a master title plat.

Conversion to New Records

Cumulated notations on the plat and tract books and continuous public use for almost 150 years made record reading in recent years next to impossible. Construction of new records began, involving a gigantic amount of study and processing. Millions of notations on the old plat and tract books were verified against the documents and survey plats.

Conversion of the old plat and tract title records to new, improved master title plat and historical index records has been in progress in various States for the past 13 years. The new record system is now in full operation in Oregon, Alaska, Nevada, Arizona, New Mexico, Colorado, Wyoming, and Montana but not yet in Idaho, California, and Washington. Oregon's conversion, however, is unique in that it is the first State to have its public land records transferred to microfilm aperture cards.

A master title plat is made on mylar material about 20 x 25½ inches in size. Each plat contains a composite of survey lines and notations that graphically show land ownership and transactions affecting the availability and use of public lands. Transactions are shown on the plats by standard lines, symbols, and abbreviations, making reading easy.

If you are interested in learning whether a parcel of land is Federally owned, you use a master title plat for this purpose.

Historical indexes are made on sheets of paper the same size as master title plats. Indexes contain a chronological listing of all actions affecting the title and availability of land within a township. Indexes are useful in solving problems that require a reconstruction of events that resulted in the present day ownership pattern.

Rather than reproducing print copies of master title plats and historical indexes for public use like other public land record offices, the Oregon State Office maintains the records on microfilm aperture cards. When a change is made on a mylar master title plat or paper historical index, new microfilm cards are reproduced for the files in the State and District Offices where they are available for public use. The microfilm land status and use cards are 3¼ x 7¼ inches in size. They contain an inch-square film of the 20 x 25½ inch plats.

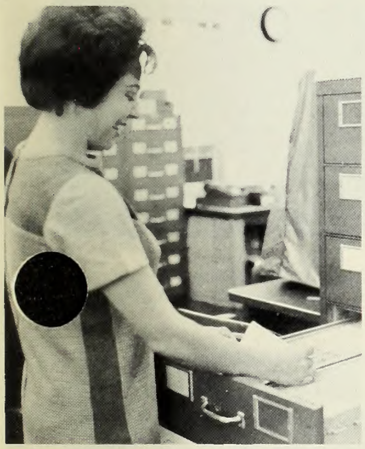
To use the microfilm records, one need only identify township number to a public assistance clerk in the Oregon State Office or District Offices. Cards then are inserted into a microfilm viewer to study the records.

A full-size print of any master title plat or historical index record costs only a dollar and can be produced in minutes.

Benefits of Microfilm

Adoption of the microfilm system in the Oregon State Office has reduced title records to a small fraction of their former volume. This promotes easy handling and rapid use in the State Office and the 10 District Offices. The microfilm title records for the entire State of Oregon now occupy only four drawers in one file cabinet. Full-size print copies in bound books stored in cabinets would occupy at least 100 square feet of floor space.

In the future, Oregon microfilm title records will be augmented by microfilm survey plats and field notes to create a modern and complete public land record system. ☐

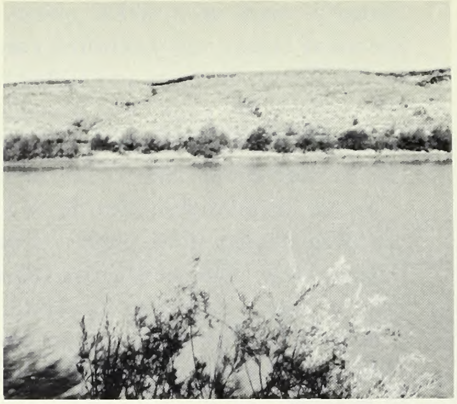


One file cabinet now holds microfilm title records for the entire State of Oregon.

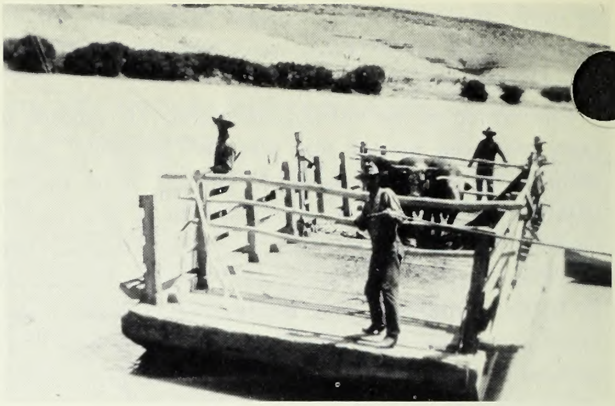
Posting a change on a master title plat.

The old way: checking land status in a plat book.

By ROGER F. DIERKING
Chief, Branch of Title and Records
and JOHN M. RADOSTA
Information Specialist
BLM State Office, Portland, Oregon



Where the ferry crossed the Green.



The ferry takes three bulls across the Green River. June 1928.

Marker at Sand Wash designates Desolation Canyon a National Historic Landmark and tells the story of Major Powell's exploration of the Green and Colorado Rivers. Area Manager Rowley.

FERRY ON THE GREEN

And other happenings at Sand Wash

THE GREEN RIVER, a meandering steep-walled tributary to the Colorado River, flows through southwestern Wyoming, northwestern Colorado and eastern Utah. As with most other rivers in the United States, people today have a different view of the Green than they had at the turn of the century. The Green River is now spanned by numerous bridges and is one of the most popular recreational streams in the West. It provides excellent trout fishing, and along its course are well-preserved archeological ruins and some of the most scenic canyon and rock formations that can be found anywhere. The Flaming Gorge National Recreation Area on the Green River, administered by the Forest Service, U.S. Department of Agriculture, is outstanding for fishing, boating, and water sports. The Flaming Gorge Dam also provides electricity for many western communities and effectively reduces the downstream silt content of the river.

But things were far different in the early 1900's.

By F. REX ROWLEY

Area Manager, River Resource Area
BLM District Office, Vernal, Utah

People settling in the Uintah Basin of eastern Utah found the Green River to be a treacherous obstacle and rier to the movement of people and livestock.

Bridges were still to be built, a major undertaking for a river the size of the Green, and the best available way to cross the river was by ferryboat. There were undoubtedly several ferries along the river in those early days; one that played an important part in the development of the Uintah Basin was built by John Henry (Hank) Stewart.

Move to Sand Wash

Hank Stewart had first built a ferry across the Green River a few miles downstream from Ouray, Utah. This location, however, proved inadequate to meet the needs of the public, and in the early 1920's Stewart moved his ferryboat 35 miles downstream to the mouth of Sand Wash. This location was more suitable for everyone, and Sand Wash soon became one of the most popular crossings on the Green River.

During the period of maximum use, 15 to 18 herds of sheep totaling as much as 45,000 head crossed the river on the ferry twice a year. Since only 50 head could be crossed at one time, it took many hours to cross an entire herd. Many sheepmen also used Sand Wash as a shearing headquarters so that only the wool had to be crossed on the ferry to get it to market. During the time Stewart operated the ferry, the fare was 3 cents each for sheep, $1 for a wagon, and $1.50 for a truck.

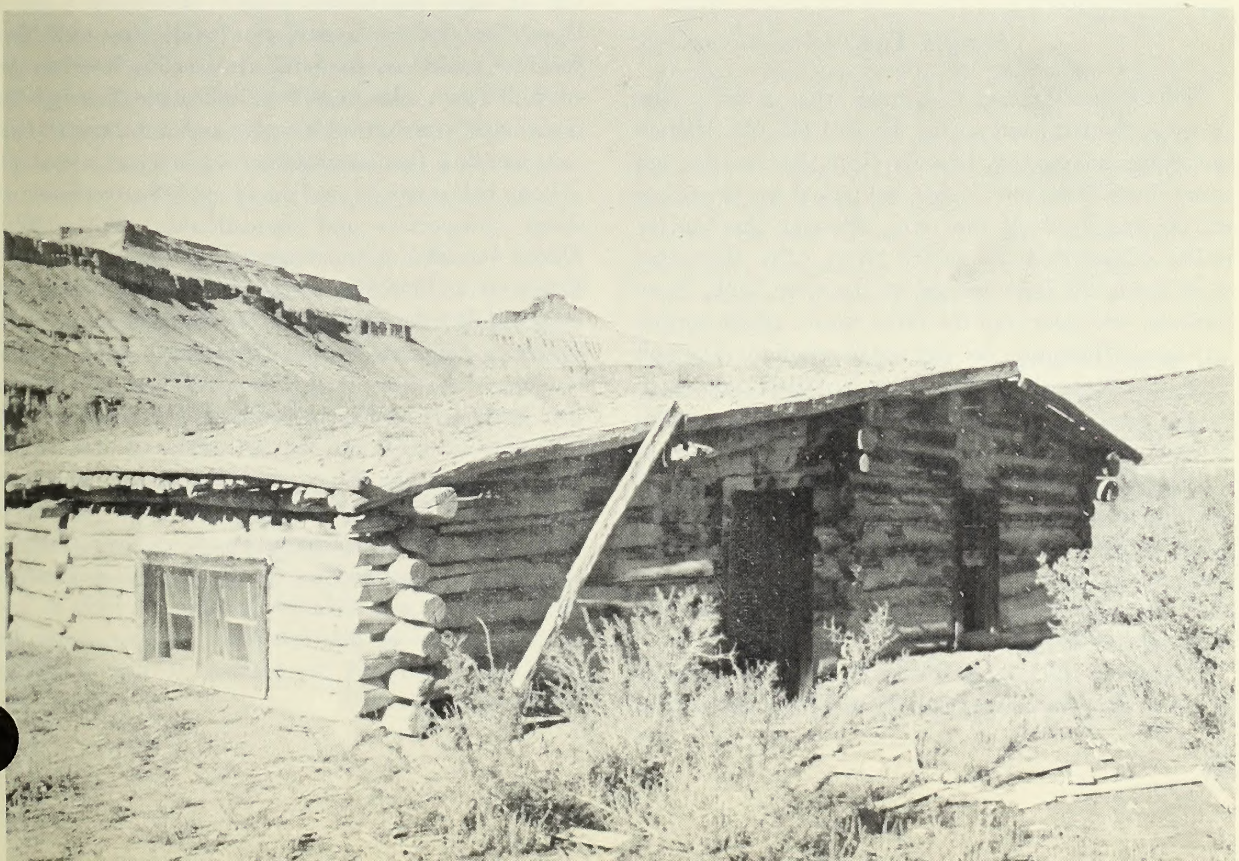
The river was the sole source of power for the ferry. It was equipped with a windlass so that the front end of the boat could be cranked around until it faced partly upstream. The pressure of the water on the boat would then force it across the river.

During the fall and spring when the river was only partially frozen or when large chunks of floating ice made it too hazardous to cross on the ferry, people could cross on a cable chair attached to the ferry's cable. After they would push off from one side of the river, the chair would slide along the cable until it reached the low point in the middle. From there the passenger would have to pull the chair up the cable to the other side by hand.

Cabin Still Stands

When Hank Stewart moved his ferry from Ouray down to Sand Wash, this meant building a new place to live. But since building materials were scarce at Sand Wash, Stewart decided to move his cabin from

e cabin Hawk Stewart moved from Ouray to Sand Wash. Note how silt has built up around the cabin from floods down Sand Wash.



Ouray. After the river was frozen over that winter, he disassembled the cabin at Ouray and, after carefully numbering each of the logs, loaded them on a bobsled and hauled them 35 miles over the river ice to Sand Wash. The old cabin still stands there.

While Hank Stewart and his family were living at Sand Wash, an Indian jumped the reservation at Whiterocks, Utah, and came into the Sand Wash area to hide out. Little attempt was made by the Government to recapture him because of the vast rugged country he had to hide in, and during the 6 years or so that he roamed the area he never made friends with any of the white men. Occasionally, however, the Stewart family would leave a loaf of bread and a leg of mutton where he could find it, and once in a while he would steal a piece of mutton from the sheep camps, but for the most part he lived off the land. One spring a sheepherder found the old fellow huddled up under a ledge where he had frozen to death that winter.

The Stewart family ran the ferry at Sand Wash until 1930 when they sold it to Chuck Sands. Afterwards, the ferry changed hands several times until Ray Thompson bought it in 1945. During the 15 years from 1930 to 1945, more bridges were built across the Green River, and other events occurred which reduced the number of sheep crossing on the ferry from 45,000 to about 25,000. Although business had declined sharply from what it had been 25 years earlier, Thompson continued to operate the ferry until 1952 when misfortune ended the ferry's career.

Ferry's End

Nobody was present to witness what actually happened at the ferry one spring day in 1952. Mr. Thompson thinks a large tree, brought down the river by high water, hooked the ferry cable and jerked out its anchor on the east bank of the river, allowing the boat to swing downstream across the river. After the water went down, the ferry lodged on the river bank. Since business was poor and the ferry wasn't really needed any more, Thompson decided not to rebuild it. The hull of the old boat still lies there today, partially concealed by the sand and willows that have built up around it through the years.

In addition to its years as a popular crossing point on the Green River, Sand Wash was also the site of some of the earliest oil shale exploration which was done in the Uintah Basin. Some of the old mine shafts that were tunneled into various formations in the hillsides can still be seen.

Grazing in the area is still much the same today as it was at the time of the Sand Wash Ferry. The area to the North of Sand Wash is used mostly as winter range for sheep, while that to the south is used almost entirely by cattle.

According to one early rancher and former ferryboat owner, one noticeable change that has occurred in the area is in the wetness of the river bottoms along both sides of the river. He says that when he first came into the area, about 1915, the river bottoms were so wet and boggy that livestock could not graze them. Today, cattle graze along both sides of the river without too much difficulty. The main cause of the drier bottoms is probably Flaming Gorge Dam, since it now controls the water level in that section of the river.

A drastic change that has occurred in the vegetative composition along the river has been the invasion of salt-cedar. In 1915 salt-cedar was so rare that nobody knew what it was. But this shrubby tree, introduced into the United States as an ornamental shrub, has now increased until it is almost impossible to walk through it in many places. The large amount of water consumed by this plant could also be a factor in the river bottoms being drier than they were in the past.

Still People Come

So the last of the ferry boats lies buried in sand and weeds, and time has altered Sand Wash and robbed it of its importance as a river crossing. But still people come. Recreationists who want to make the scenic float trip through the Green River's Desolation Canyon launch their rafts at Sand Wash. It is the last place that provides vehicle access to the river before it enters the canyon. Those adventurers who do make the trip—the access road is extremely rough—and who launch their rafts and float the Green, follow a historical precedent.

Long before the days of the ferry, before settlers and sheep, prospectors and recreationists, Major John Wesley Powell and nine companions floated past Sand Wash on a June day in 1869. The explorers had launched their four boats at Green River, Wyo., a month earlier to begin the first recorded exploration of the canyons of the Green and Colorado Rivers. And it was just beyond Sand Wash, in Desolation Canyon, that they first ventured into the last unknown area of the United States. For this reason, the canyon has been designated a National Historic Landmark and Sand Wash, because it is nearby and more easily accessible, was chosen as the site for an identifying monument. The monument was unveiled on June 29, 1969 in one of many ceremonies held last year to commemorate the 100th anniversary of the historic voyage of Major Powell and his men. ☐

LAND LAW REPORT

The following news notes, compiled by the Public Land Law Review Commission, report the progress to date of the Commission's work.

Commission to Meet Its Deadline

The Public Land Law Review Commission must and will submit its final report and recommendations to Congress and the President not later than June 30, 1970, according to Representative Wayne N. Aspinall (Colo.), Chairman of the Commission.

Aspinall made the statement before the American Forestry Association's annual meeting in Colorado Springs, Colo., on September 22, thus scotching any rumors that the Commission might seek another extension of time to complete its study program.

Advisory Council To Hold Two Meetings in 1970

The Commission's Advisory Council, with Governors' Representatives in attendance, will hold two meetings in 1970. The first will be held on January 13–16 to discuss Organization, Administration, and Budgeting; Appraisal Techniques and Procedures; State Land Policies; Demands on the Public Lands; Inventory Information on Public Lands and Adjustment of Use Rights.

The second meeting, to be held on February 17–19, will be devoted to discussions of Environmental and Ecological Factors; Land Acquisitions and Exchanges; Multiple Use; Disposal Techniques and Procedures; and Guidelines for Retention or Disposition.

Both meetings will be held in Washington, D.C.

Completed Study Reports

Milton A. Pearl, Commission Director, has announced the completion of study reports, as of January 1, 1970. Those completed since the previous announcements on this page (see Summer 1969 issue) are:

Forage Resource of the Public Lands, by the University of Idaho.

Regional and Local Land Use Planning, by Herman D. Ruth & Associates, Berkeley, Calif.

Trespass and Unauthorized Use of the Public Lands, by Ireland, Stapleton, Pryor & Holmes, Denver, Colo.

Legal Study of Nonfuel Mineral Resources, by Twitty, Sievwright & Mills, Phoenix, Ariz.

Nonfuel Mineral Resources, by the University of Arizona.

Energy Fuel Minerals, by Abt Associates, Inc., Cambridge, Mass.

Oil Shale on Public Lands, by University of Denver, School of Law.

Geothermal Steam Resources of the Public Lands, by the Commission staff.

Outdoor Recreation Use of the Public Lands, by Herman D. Ruth & Associates, Berkeley, Calif.

Federal Public Land Laws and Policies Relating to Use and Occupancy, by Daniel, Mann, Johnson & Mendenhall, Los Angeles, Calif.

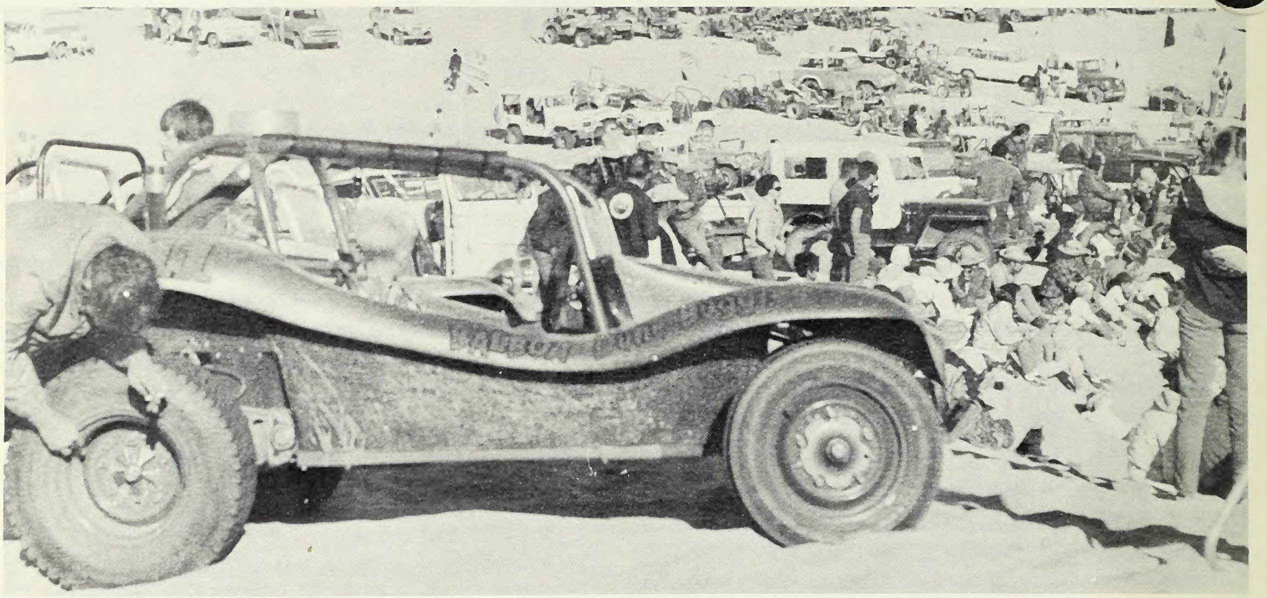
User Fees and Charges for Public Lands and Resources, by Commission staff and consultants.

Demands on Public Lands, by Robert S. Manthy, Seattle, Wash.

Appraisal Techniques and Procedures Utilized in Connection with Actions Related to Federal Public Lands, by Kronick, Moskovitz, Tiedemann & Girard, Sacramento, Calif.

Contracts for the studies of Appraisal Techniques and Procedures and the initial assembly of data and analysis of Probable Future Demands on the Public Lands were awarded in September.

WHERE DO ALL THE PEOPLE GO?



National headlines called attention to a rock-and-roll festival in California attended by an estimated 300,000 people over the 1969 Thanksgiving weekend. But almost unnoticed by the press were the 500,000 Californians who gathered in the California Desert east of the Los Angeles-San Diego-San Bernardino triangle for such sports as dune buggy hill-climbing competitions, rockhounding, camping, and other desert activities. BLM's California State Office is completing a lengthy study of the 16-million acre desert which contains 10 million acres of public lands.

This is a compilation of the most up-to-date information possible on up-coming sales of public lands by land offices of the Bureau of Land Management. For details of land descriptions, prices, and other information pertinent to sales, you must write the individual land office concerned. In most cases, there are adjoining landowners who have statutory preference rights and may wish to exercise them to buy the land. Sales notices will point out, insofar as possible, problems relating to (1) access, (2) adjoining owner preference rights, (3) small-tract sales limitation of one per customer, and other pertinent information. When possible, all sales are scheduled far enough in advance so ample notice can be given in Our Public Lands. Sales listed can be canceled on short notice for administrative and technical reasons. A listing of BLM land offices with addresses is found on the opposite page.

Key: A, acres; app, appraised; El, elevatio est val, estimated value; Cty, county; veg, ve tative; pot, potential; pub, publication co elec, electricity; tel, telephone; D.O., District Office; L.O., Land Office.

ALASKA

Public lands in Alaska are not available for sale at this time. Future public land sales will be announced in this space when scheduled.

CALIFORNIA

4 tracts, .52 A to 12.67 A, outside Sonora, Tuolumne Cty. Rough and hilly. 3 tracts on State highway. App $500 to $12,670.

Several tracts of scattered, rough grazing lands, San Benito Cty. Poor soil; mostly brush covered; no water. Write Sacramento L.O. for details.

121 small tracts in 7 different areas of San Bernardino Cty. Available every Wednesday at 10 a.m., Riverside L.O.

COLORADO

30 tracts, 15.17 A to 320 A, in Cheyenne and Lincoln Ctys. Moderately rolling; suitable for grazing livestock. No domestic water available. 8 tracts on public roads; 1 corners public road; others have no public access. App values range from $30 to $45 per A. Sale February or March 1970. Write Colorado L.O for costs and other details.

OREGON

[illegible]20 A, 2 miles north of Jordan Valley, Malheur Cty. Grazing [illegible] gentle to moderately rolling. Sagebrush and native grasses.

NEVADA

7 tracts, 2.5 A to 40 A, totaling 102.5 A, at Jackpot in Elko Cty. Several tracts with highway frontage on U.S. 93. All suitable for residential or commercial development. App $200 to $5,000. Sale at Elko D.O., 10 a.m., March 31, 1970.

40 A, 8 miles northwest of Moapa, Clark Cty. Generally level to sloping; Arrow Canyon Wash bisects tract. Access by ¼-mile dirt trail to improved road. Utilities; zoned U—Open Land; suitable for residential development. App $4,000. Sale at Las Vegas D.O., 9 a.m., February 4, 1970.

120 A, 14 miles south of Yerington, Lyon Cty. Level; sandy loam soils; mixed stand of Indian ricegrass and greasewood; suitable for agriculture. Physical and legal access available. To be app in December 1969. Sale at Carson City D.O., 10 a.m., February 12, 1970.

80 A, 1½ miles south of Ely, White Pine Cty. Access over ¼ mile of dirt road from U.S. 93. Utilities nearby; suitable for residential development. App $8,500. Sale at Reno L.O., 1 p.m., February 24, 1970.

40 A, 40 miles north of Winnemucca, Humboldt Cty. Nearly level; silt-loam soils; relatively rocky. Power line nearby. No legal access; zoned for open use. Suitable for agriculture if water can be obtained from existing permits; no irrigation permits now being issued in this area. App $1,200. Sale at Reno L.O., 1 p.m., February 24, 1970.

NEW MEXICO

[illegible]0 A, 45 miles west-northwest of Hatch, Sierra Cty, adjacent [illegible] Gila National Forest. Rough, mountainous grazing land; legal and good vehicle access. Elec and tel ¼ mile distant. App $800.

4 tracts, 160 A to 240 A. Properties center 2 to 3 miles north of Lake Valley, an abandoned mining town, Sierra Cty. Steep, hilly to rough, mountainous grazing land with shallow soils. REA elec line crosses portions of 2 tracts. App $13 per A.

5 tracts, 40 A to 440 A, 14 to 16 miles west-southwest of Hatch, Luna Cty. Low rolling to relatively level; used for livestock grazing. Elec and natural gas available in neighborhood. Properties are within the Nutt-Hockett Underground Water Basin. 1 tract app $12.50 per A; 4 tracts app $20 per A.

80 A, ½ mile east of La Luz and 3½ miles north-northeast of Alamogordo, Otero Cty. Low rolling to steep foothills; unimproved. Elec, natural gas, water, tel are ¼ mile distant. App $5,600.

40 A, 4 miles northwest of Tularosa, Otero Cty. Low rolling to level desert brush land; possible underground water. Elec ¾ mile distant. App $2,400.

40.48 A, 1 mile north of Tularosa, Otero Cty. Low rolling to level desert brush land; possible underground water. Elec along west side; natural gas and tel ¼ mile distant. App $3,850.

160 A, 5 miles south of Hagerman. Moderately rolling, fair turf, scattered mesquite and creosote bush; thin, gravelly, sandy loam. Elec 1 mile. Est val $16 to $19 per A.

3 tracts, 400 A to 640 A, 12 miles southwest of Hagerman and 23 miles south of Roswell. Gently rolling, fair turf, scattered mesquite and creosote bush. Elec 1½ miles. Est val $15 to $19 [illegible]er A.

729.35 A, east central Chaves Cty. Moderately rolling with sand hummocks and a thin to moderate depth of gravelly sandy soil; veg moderately dense. Best suited for livestock grazing. Power transmission line passes through center of tract. Est val $9 to $12 per A.

UTAH

2 tracts, 40 A each, 1 mile north of Coalville, Summit Cty. Isolated; rough; suitable for grazing. Coal, oil, and gas, and canals and ditches constructed by authority of U.S. all reserved to U.S. Tract 1 app $1,200; tract 2 app $2,000. Sale on March 18. 1970.

WYOMING

1,329.49 A, Park Cty. Extremely rough and mountainous. Borders Shoshone National Forest; surrounded on all other sides by private lands. No road access. Sale after February 1, 1970. Write Wyoming L.O. for cost and details.

128.86 A, 10 miles east of Encampment, Carbon Cty. Rolling to mountainous. No legal access. Sale after February 1, 1970. Write Wyoming L.O. for cost and details.

946.69 A, Chugwater Creek drainage, Laramie Cty. Rolling grazing land. No live water and no legal access. Sale after February 1, 1970. Write Wyoming L.O. for cost and details.

5.77 A, 9 miles south of Casper on Casper mountain. Gently to strongly sloping with stand of lodgepole pine of pole size and smaller. Access is via improved and well-travelled road. Sale after February 1, 1970. Write Wyoming L.O. for cost and details.

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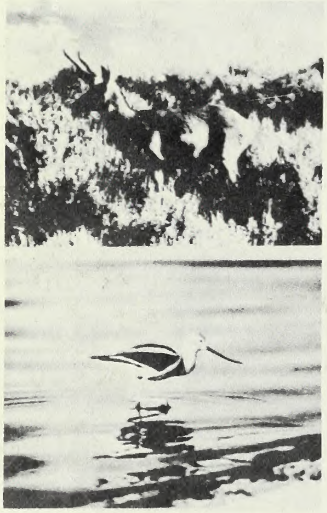

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